



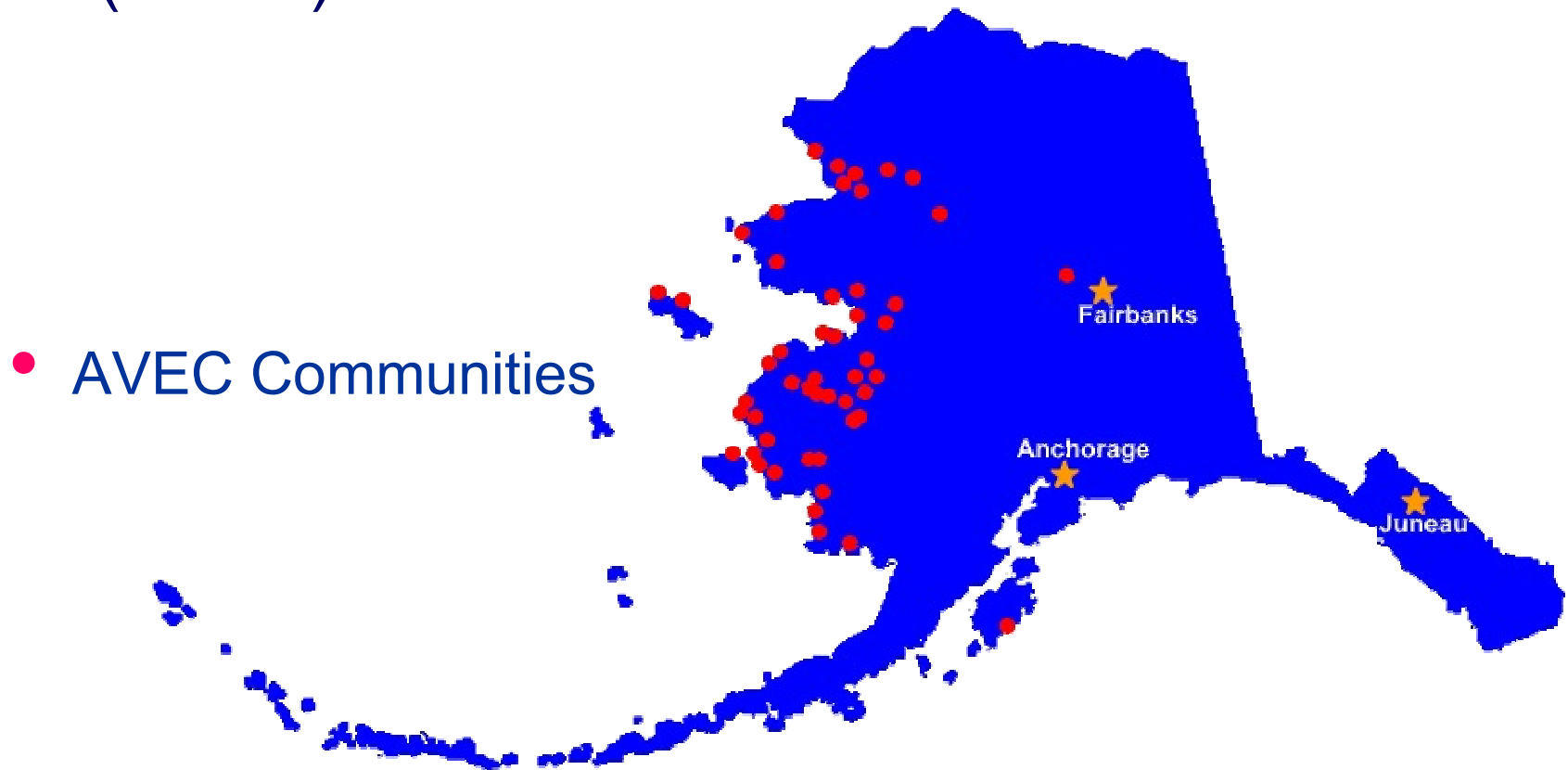
Alaska Village Electric Load Calculator

Mia Devine
National Renewable Energy Laboratory
Anchorage, AK



Alaska

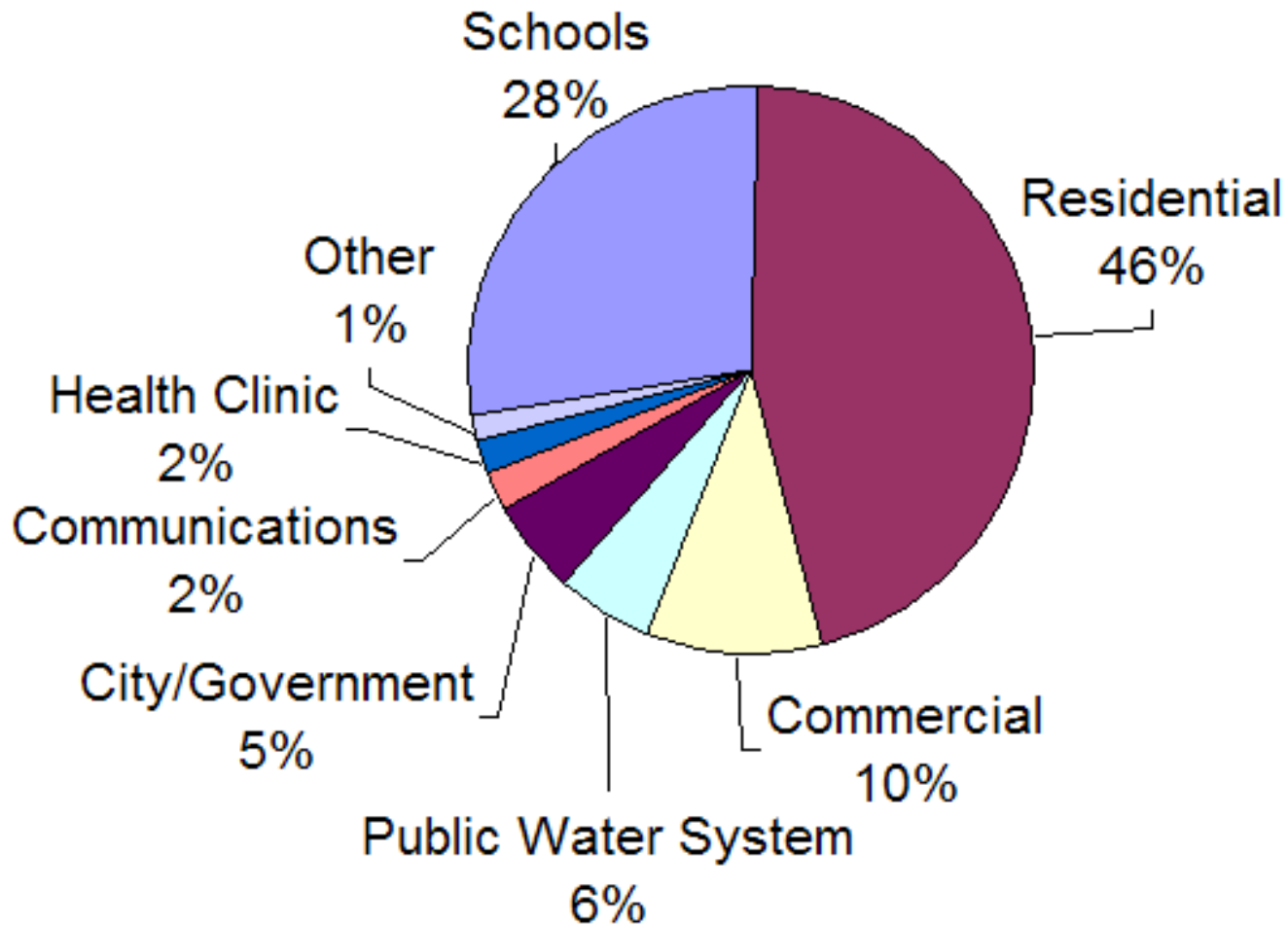
Data from Alaska Village Electric Cooperative (AVEC)



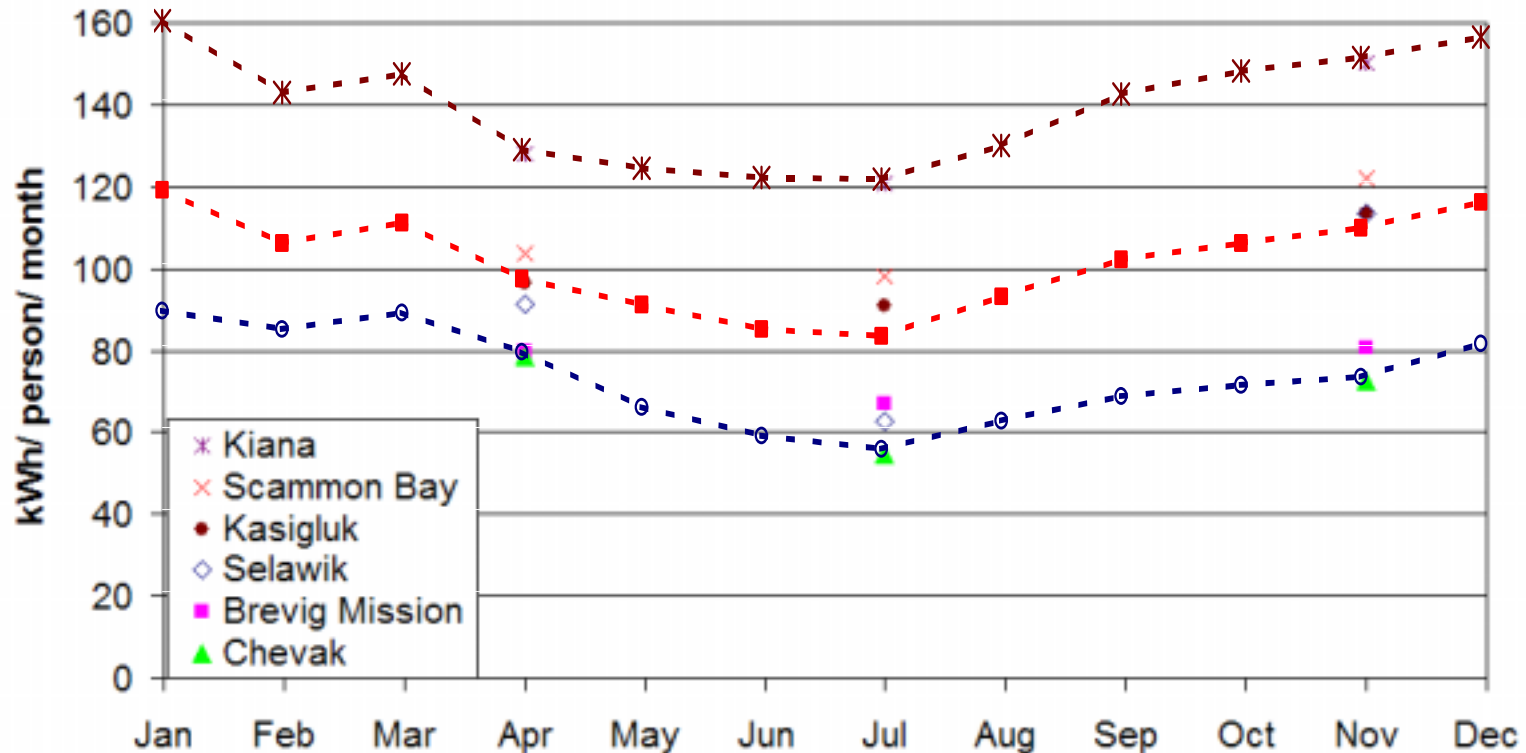
AK Village Electric Load Calculator

Village Name:	Village Name					
Population:	500	Description of Categories:				
	Category (1-5)	1	2	3	4	5
Median Household Income:	1	less than \$26,000	about \$30,000	more than \$35,000	-	-
K-12 School:	2	Low	Average	High	-	-
Public Water System:	3	Level 2 Low	Level 2 High	Level 1 Low	Level 1 Med	Level 1 High
Health Clinic:	2	Local Clinic	Sub-regional Clinic	-	-	-
Communications:	2	Basic	Advanced	-	-	-
# of Small Businesses	2					
# of Large Commercial:	3					
# of Community Buildings:	4					
# of Government Offices:	4					
Other (usually 1-5%):	5%					

Major Consumers of Electricity

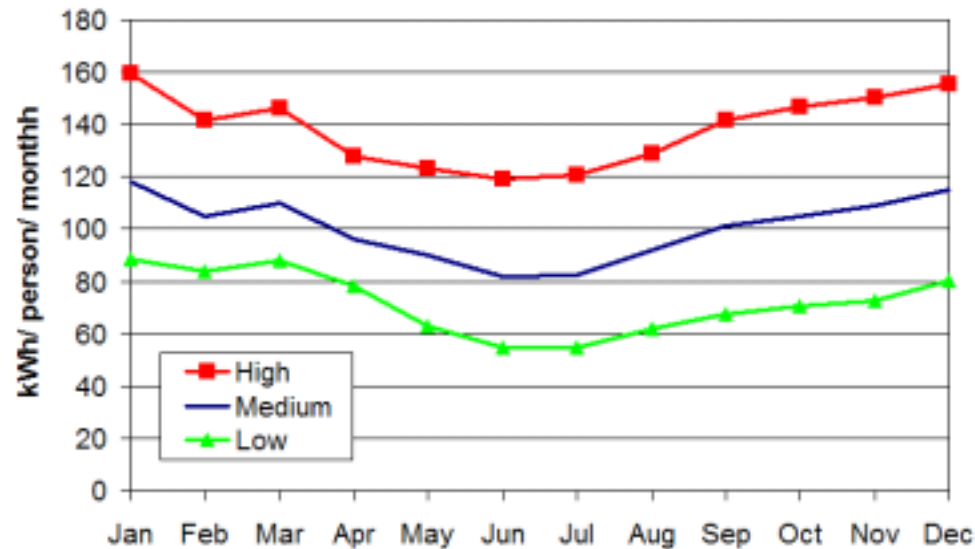


Residential Sector



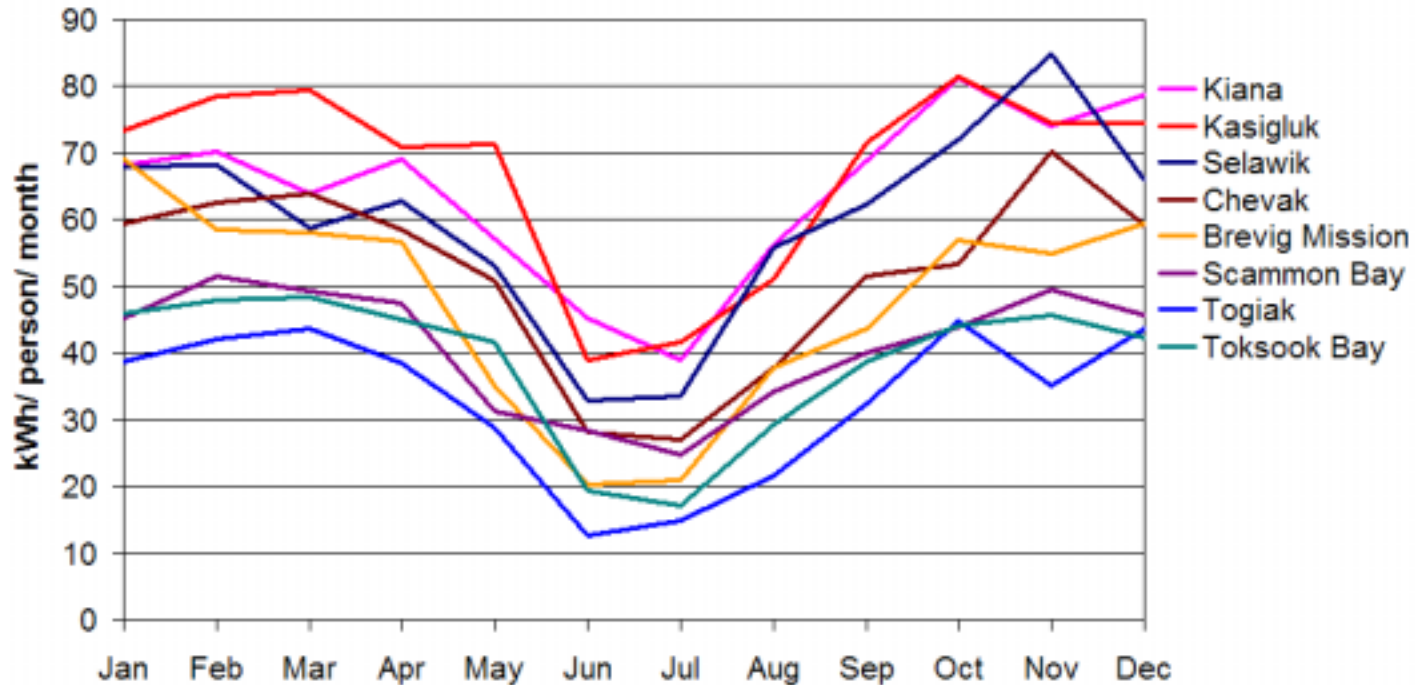
- Economic growth directly related to household energy consumption

Residential Building Block



Category:	Low	Medium	High
Median Household Income:	Less than \$25,000	\$25,000 to \$35,000	More than \$35,000
Monthly Consumption	(kWh/person/mo.)	(kWh/person/mo.)	(kWh/person/mo.)
Jan	89	118	159
Feb	84	105	142
Mar	88	110	146
Apr	78	96	128
May	63	90	123
June	55	82	119
July	55	82	121
Aug	62	92	129
Sept	68	101	141
Oct	70	105	147
Nov	72	109	150
Dec	81	115	155

Village Schools

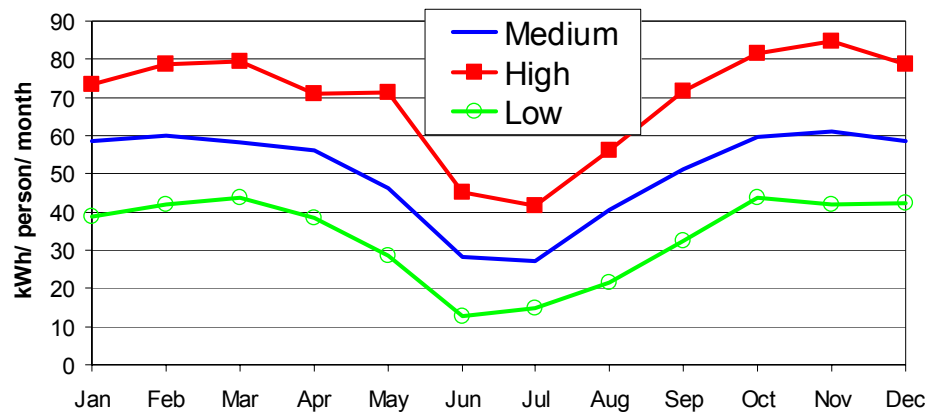


Gambell School (source: DCED)

Devine

2004

School Building Block



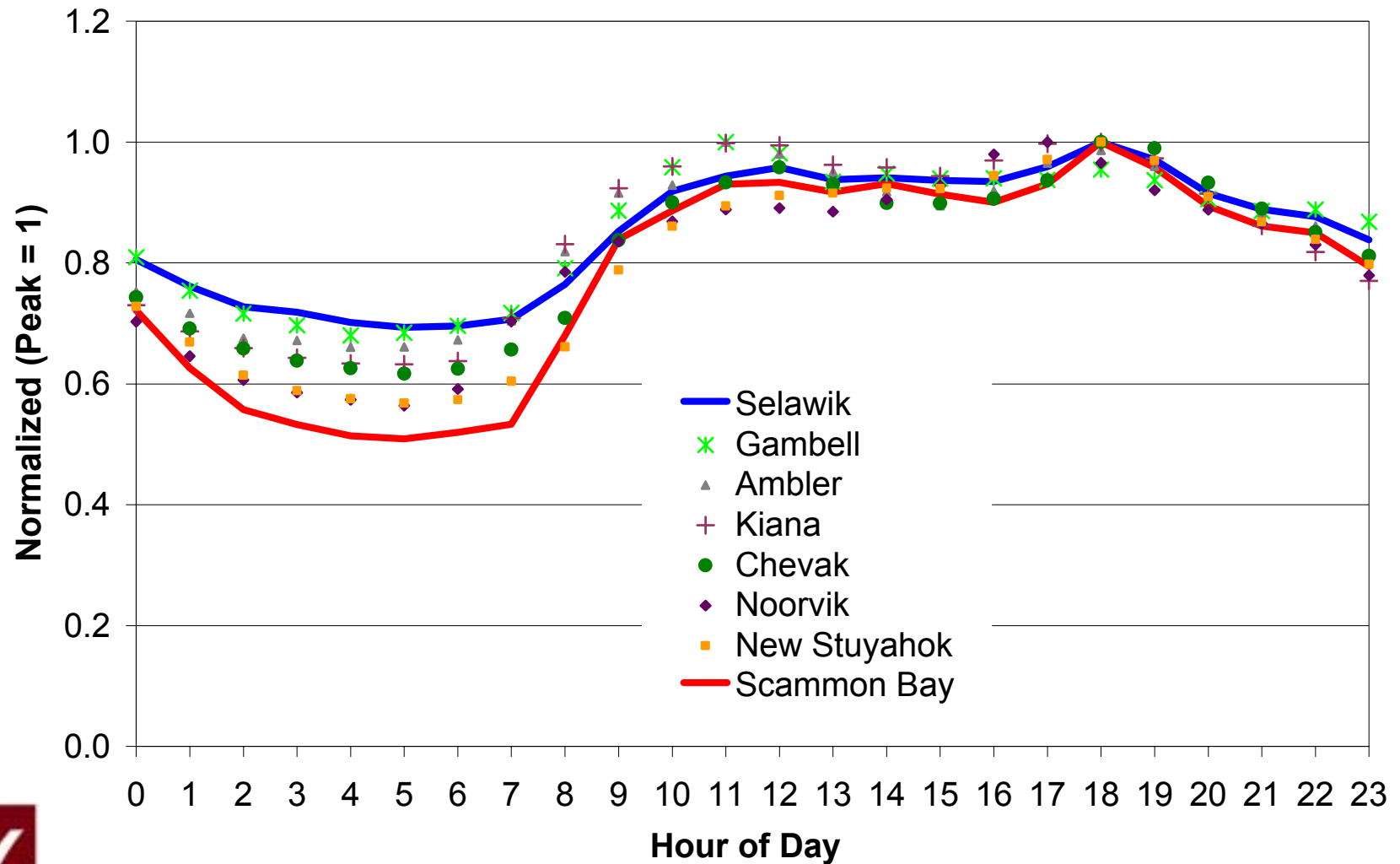
Category:	Low	Medium	High
Characteristics:	Located in southern/ maritime climate region, uses propane or gas for heating and cooking.	Average school with air handling units and some electrical appliances.	Located in the arctic climate region, has its own septic system, uses electric heaters and stoves, or more than one school building.
Monthly Consumption	(kWh/person/month)	(kWh/person/month)	(kWh/person/month)
Jan	38.8	58.5	73.4
Feb	42.0	59.9	78.6
Mar	43.6	58.2	79.4
Apr	38.6	56.1	70.8
May	28.7	46.1	71.3
June	12.7	28.2	45.3
July	14.8	27.4	41.5
Aug	21.6	40.5	56.2
Sept	32.5	51.2	71.5
Oct	43.9	59.7	81.4
Nov	42.0	61.1	84.8
Dec	42.3	58.7	78.8

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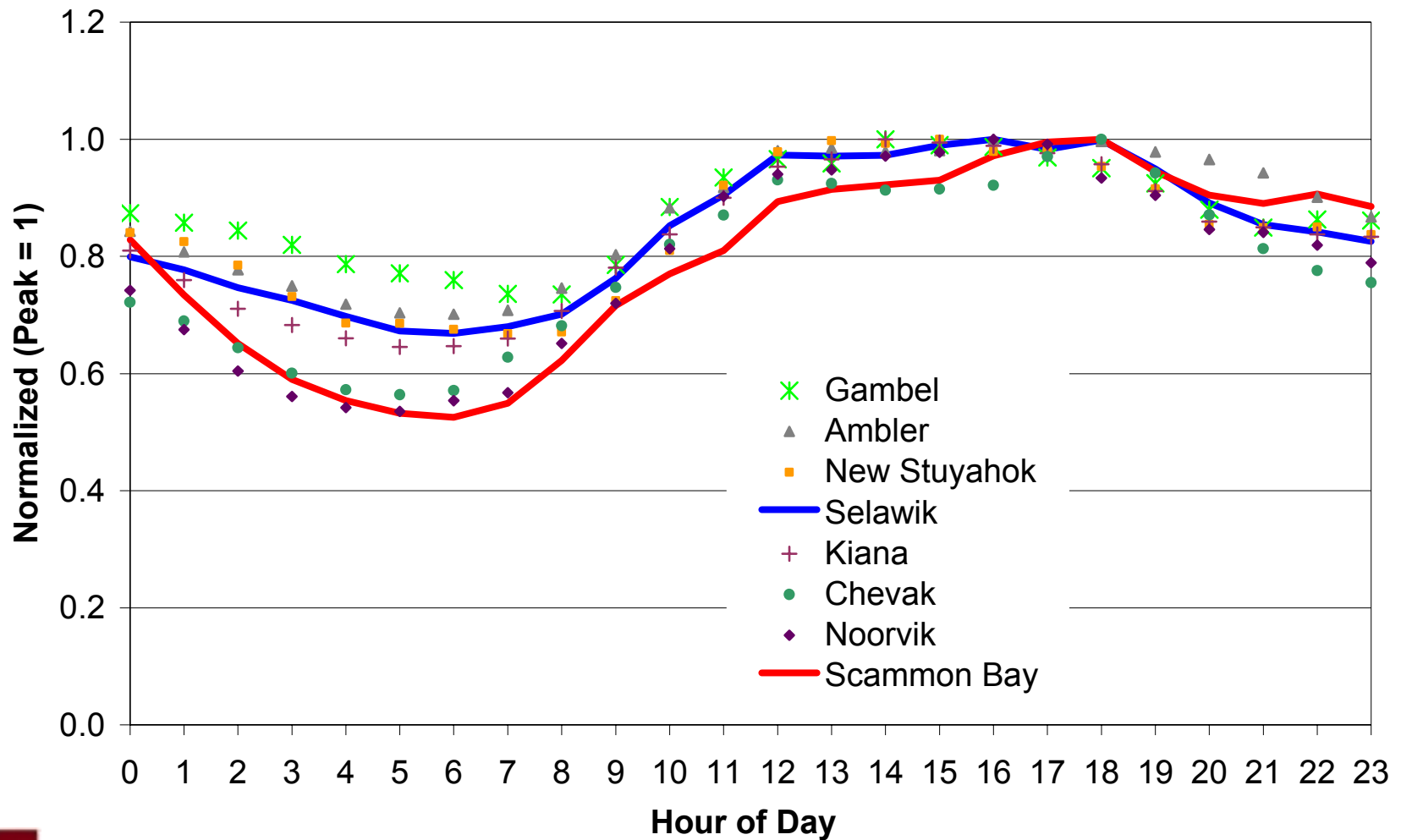
January Daily Load Profiles

Average Day in January



July Daily Load Profiles

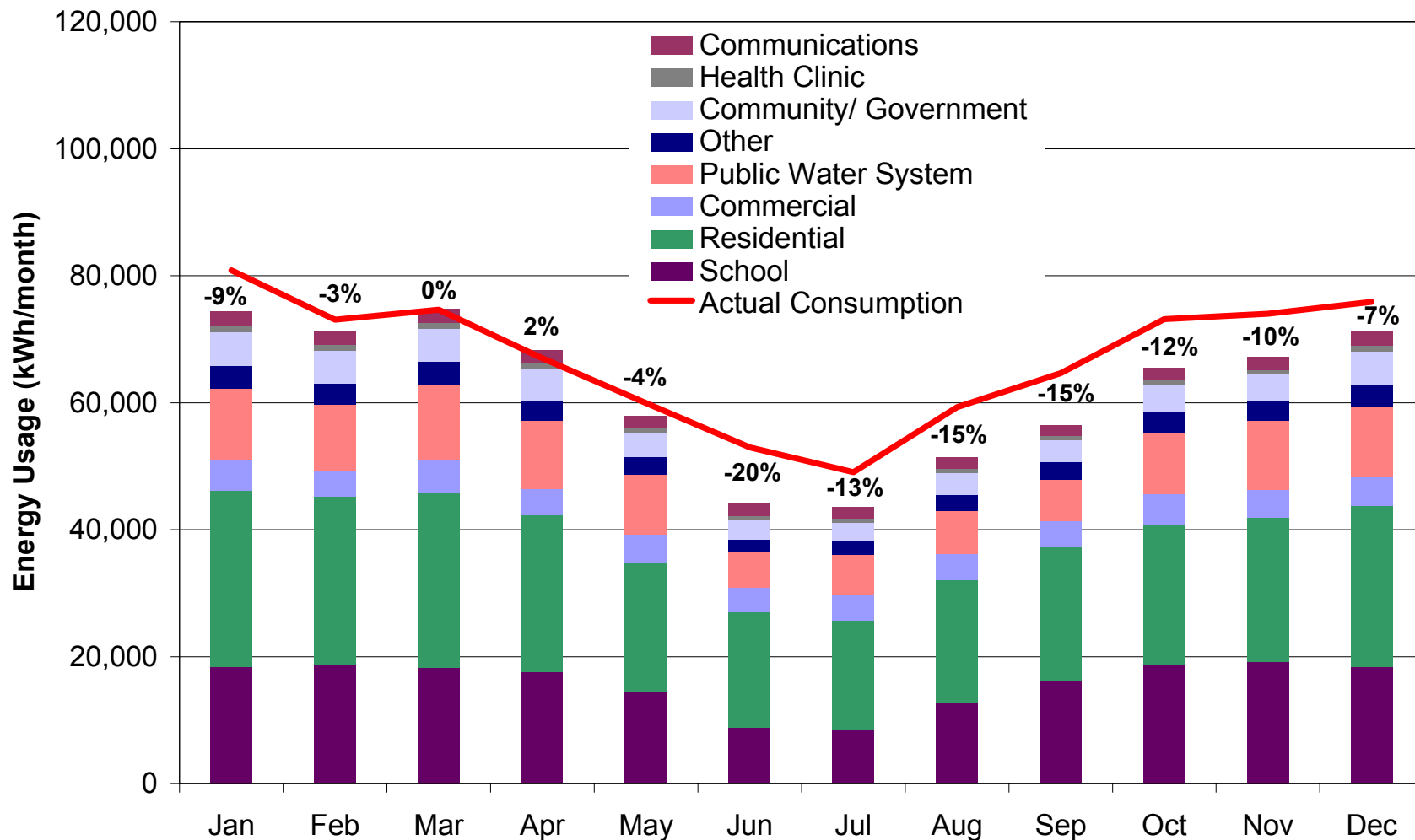
Average Day in July



AK Village Electric Load Calculator

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Example: Brevig Mission, AK



Average Error = 9%

Areas for Further Investigation

- Improve load calculator with hourly measurements of individual sectors
- Add thermal loads



Gambell School (source: DCED)



Water Treatment Facility (source: DCED)

Contact Info

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